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Dairy Animal: Care and Health Management System

Hitakshi Marathe[1], Gaurav Choudhary[2], Priya Parashar[3] and Amit Shankar[4]

[1]ICAR-IARI, New Delhi and [2, 3] and [4] are from Gratize Venture Consulting Services Pvt. Ltd, Pashushala.com

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Introduction

A dairy animal refers to an animal that is specifically raised and bred for the production of milk and dairy products. These animals are primarily kept by farmers and dairy producers to obtain milk, which is a valuable commodity used to produce various dairy products such as butter, cheese, yogurt, and ice cream etc.

The most common dairy animals are cows, particularly certain breeds specifically bred for their milk production, such as Sahiwal, Gir, Red Sindhi, Holsteins, Jerseys, and Ayrshires. Cows are the primary source of milk in many parts of the world due to their high milk yields.

However, other animals can also be considered dairy animals depending on the region and cultural practices. In some areas, goats, sheep, and buffalo are raised for their milk, which is used to produce a variety of dairy products. These animals have the ability to convert grasses and other vegetation into nutrient-rich milk, which is rich in proteins, fats, vitamins, and minerals.

Dairy animals require specialized care and management to ensure their health and optimal milk production. This includes providing them with proper nutrition, shelter, and veterinary care. Dairy farming is a significant agricultural practice worldwide and plays a crucial role in providing dairy products for human consumption.

The care and management of a calf are crucial for its health, growth, and overall well-being. Here are some important aspects to consider:

Care and management of calf:

The dam should be dried 6-8 weeks before expected calving and should be fed well.

A. Early Management:

- Immediately after birth remove mucous or phlegm from those nose and mouth.

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- The naval should be tied about 2-5 cm away from the body and cut 1 cm below the ligature and apply Tincture iodine or boric acid or any antibiotic.

B. Feeding of calves:

- Feed colostrums i.e. the first milk of cow within 15 minutes of calving.
- Colostrums for 1st three days – 2 to 2.5 liters/day
- The limit of liquid milk feeding is 1/10th of its body weight with a maximum of 5-6 liters per day and continue liquid milk feeding for 6-10 weeks. Over feeding causes 'Calf Scours'.
- First half hour to 12 hours of life, calf should be given with colostrums of its 5-8% of body weight.
- Buffalo calf should be fed with colostrums at the rate- 1/15th of its body weight.
- Give calf starter after one month of age.
- Provide good quality green fodder and hay from 4th month onwards.
- Feeding of antibiotics to calves improves appetite, increases growth rate and prevents calf scours. E.g. Aureomycin, Terramycin etc.

Ration:

A ration refers to the specific combination and quantity of feed ingredients provided to an animal to meet its nutritional requirements. It is a carefully formulated diet designed to provide all the necessary nutrients, including proteins, carbohydrates, fats, vitamins, and minerals, for the animal's growth, maintenance, and production.

The ration is tailored to the specific needs of the animal species, age, weight, physiological stage (e.g., lactation, gestation), and desired outcomes (e.g., weight gain, milk production). It takes into account the animal's nutritional requirements, feed availability, and economic considerations.

The formulation of a ration involves selecting appropriate feed ingredients, such as grains, forages, protein sources (like soybean meal or fishmeal), and vitamin and mineral supplements. These ingredients are combined in precise proportions to create a balanced diet that meets the animal's nutritional needs. It may be provided in various forms, including complete pelleted feeds, mixed grains, or combinations of roughages and concentrates.

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Rations are formulated based on scientific principles and may be adjusted periodically depending on factors like the animal's growth rate, body condition, and changes in production levels. Regular monitoring of the animal's performance and consultation with a nutritionist or veterinarian help ensure the ration meets the animal's nutritional requirements effectively.

Proper ration formulation and feeding management are essential for the animal's health, productivity, and overall well-being. They play a crucial role in maximizing growth, reproduction, milk production, and other desired outcomes while minimizing the risk of nutritional deficiencies or imbalances.

Balanced Ration:

It is defined as the ration which provides essential nutrients to the animals in such proportion and amount that are required for the proper nourishment of the particular animal.

Types of feed:

- **Roughages –** They refer to feed materials that are high in fiber and low in digestible nutrients. They are an essential component of animal diets, particularly for ruminant animals like cattle. Roughages are primarily composed of plant material, including grasses, legumes, and other forage crops, e.g. grasses, maize stalks and sweet potato tops. They provide dietary fiber, which is important for proper rumen function, maintaining gut health, and promoting efficient digestion in animals.
- **Concentrates -** They are energy-dense feeds that are usually low in fiber and high in carbohydrates, proteins, and fats. Common concentrates include grains like corn, barley, wheat, and sorghum. Concentrates are fed to provide energy and promote growth, milk production, or weight gain in animals. E.g. grain crops.

Table 1: Difference between Concentrate and Roughages

S.No.	Concentrate	Roughages
1.	10% moisture and 90% dry matter	Dry fodder – 10% of moisture and 90% dry matter Green fodder – 80-90 % moisture and 10 % dry matter
2.	Highly digestible	Comparatively less digestible
3.	Crude fibre less than 18%	More than 18%
4.	Nutritive value/unit mass is high	Low

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5.	Compact in nature	Bulky
6.	Keeping quality-high	Variable: dry fodder – high, green fodder- less/low

Management Practices:

- **Tattooing –** It is a common practice used for identification and record-keeping purposes. It involves the permanent marking of an animal's skin or ear with a unique code or number using a tattooing kit specifically designed for livestock. It is done in the ear at birth.
- **Branding** - It is a traditional method of permanent identification that involves the application of a heated metal brand to the animal's skin. The brand is typically in the form of a unique symbol, design, or alphanumeric code that represents the owner's or ranch's identification mark. It is done after one year.
- **Dehorning** - It is the practice of removing or preventing the growth of horns in cattle. It is done for various reasons, including safety, animal welfare, and herd management. It is done when calf are of 7-10 days after birth with red hot iron or caustic potash stick or electrical method.
- **Deworming** – It is the practice of treating and controlling internal parasites (worms) that can affect the health and productivity of cattle. Internal parasites commonly found in cattle include roundworms, tapeworms, and flukes. It is done at 30 days interval.

Table 2: Housing of calf

Age	Housing type
0 – 3 months	Individually
3 – 6 months	Group
Above 6 months	Male and female calves should be housed separately

Feeding schedule of growing animals (From 6 months onwards)

For calves below one year of age it is always desirable to give sufficient concentrates in addition to good roughage so that they make optimum growth. Feeding concentrate can be considerably reduced in the case of calves over one year of age fed on high quality roughage. A judicious mixture of roughage and concentrate is essential for obtaining optimum growth without undue fat deposition. From six months onwards, calves can be given the same type

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of concentrate mixture (14-16% Digestible Crude Protein and about 70% Total Digestible Nutrients) as used for adult cattle.

Feeding schedules for dairy animals

- Good quality roughage saves concentrates. Approximately 20 kg grasses (gunea, napier, etc.) or 6-8 kg legume fodder (cowpea, Lucerne) can replace 1 kg of concentrate mixture (0.14-0.16 kg of DCP) in terms of protein content.
- For lactating cows, 1 kg of concentrate mixture (compounded feed) (0.14 – 0.16 kg. DCP and 0.70 kg. TDN) may be required for every 2.5 – 3.0 kg. of milk over and above the maintenance allowance.
- 1 kg straw can replace 4-5 kg of grass on dry matter basis.
- For high yielding animals, the optimum concentrate roughage ratio on dry matter basis should be 60:40.

Table 3: Feeding schedule for cross breed cow (Quantity in Kg.)

S.No.	Type of animal	Feeding during	Green fodder	Dry fodder	Concentrate
Cross Breed Cow					
1	6 to 7 liters milk per day	Lactation days	20 to 25	5 to 6	3.0 to 3.5
		Dry days	15 to 20	6 to 7	0.5 to 1.0
2.	8 to 10 liters milk per day	Lactation days	25 to 30	4 to 5	4.0 to 4.5
		Dry days	20 to 25	6 to 7	0.5 to 1.0

Table 4: Feeding schedule for different classes of adult cows (approximate body weight-250 kg)

When green grass is plenty			When paddy straw is the major roughage		
Category	**Concentrate mixture (Kg)**	**Green Grass (Kg)**	**Concentrate mixture (Kg)**	**Green Grass (Kg)**	**Paddy Straw (Kg)**
Dry Cows	-	25-30	1-1.25	5.0	5-6

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Milking	1.0 kg for every 2.5 kg of milk of average 4 % fat percentage, in case of buffalo 1.0 kg for every 2.0 kg of milk produced.	30	1.25 + 1 kg for every 2.5 – 3.0 kg of milk	5.0	5-6
Pregnant	Production Allowance + 1 to 1.5 kg from 7th month of pregnancy	25-30	Maintenance + production + 1 to 1.5 kg from 7th month of pregnancy	5.0	5-6

Note: In case of dry cow, allowance up to 1 kg concentrate can be given if the condition of cow is poor or the fodder quality is inferior.

Table 5: Feeding schedule of bull

Body weight (kg)	Concentrate mixture (kg)	Green grass (kg)
400-500	2.5-3	20-25

A bull in service should be given good quality roughage with sufficient concentrates. Too much roughage feeding should be avoided as it makes the bull paunchy and slow in service. A large concentrate allowance may make the bull too much fatty and less virile.

Care and Management of Heifers

- Heifers are reared indoors, outdoors: 9 to 12 months.
- Exotic breeds heifers performance is slow in tropical areas in the outdoors.
- Small breeds- Age at first breeding – 15 months
- Large breeds – 18 months
- Adequate live weight would be 200-225 kg. for smaller breeds and 275 kg. for larger breeds.
- Cross breed heifers show signs of heat as early as 10 months of age none of them are mated until attain the body weight – 225/275 kg. or a minimum of 14 months of age.
- Age at first calving 25 to 28 months.

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Table 6: Feeding of Heifers

Feed Type	Age	Quantity
Concentrate feed	3 months to 1 year	1 kg
	Above one year	2 kg
	Pregnant Heifers	3 – 3.5 kg
Green Fodder	Leguminous Fodder	10 kg
	Non Leguminous Fodder	25 kg
	Dry Fodder	3 kg
Grains Feeding	Prior to Calving	1.5 kg/day

Care and Management of Milch Animals

- Concentrate at the rate of 1 kg for every 2 to 2.5 liters of milk should be provided.
- Milking thrice is better than twice since 10-15 % more milk can be produced.
- Provide at least 60 – 90 days dry period between calving. If the dry period is not sufficient, the milk yield is subsequent lactation will be reduced.

Care and Management of Dry and Pregnant Animals

- Extra concentrate mix of 1.25 to 1.75 kg should be provided for pregnant animals as pregnancy allowance.
- Feed one kg extra concentrates during last 8 weeks of gestation.
- Feed laxative about 3-5 days before and after calving (wheat bran 3 kg + 0.5 gm of Groundnut cake + 100 gm of mineral mixture of salt).

Care and Management of Bullock

- The working hours for bullocks are recommended as follows:
- Normal Work – 6 hours of carting or 4 hours of ploughing.
- Heavy Work – 8hours of carting or 6 hours of ploughing.
- Sufficient roughages and 1-2 kg of concentrates may be provided for feeding of bullocks during break period in works, the animal may be left for free grazing.

Table 7: Feeding schedule according to weight:

Body weight	Normal work	Heavy work
300 kg	2 kg	2.5 kg
400 kg	2.5 kg	3.0 kg

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500 kg	3.0 kg	3.5 kg

In addition 25 kg of green and 3 to 5 kg of dry fodder should be given.

Conclusion

Since they are sociable creatures, dairy animals benefit from social interaction. Overall, the care and management of dairy animals require a comprehensive approach that considers their nutrition, health, reproduction, and living conditions. By implementing these practices, dairy farmers or producers can ensure the well-being of their animals and optimize milk production, resulting in a successful and sustainable dairy operation. Remember, it is important to consult with a veterinarian or an experienced livestock specialist to establish a comprehensive calf care and management plan tailored to your specific circumstances and location.